	Application No.	**Applicant(s)**
Notice of Allowability	09/754,179	NELKEN ET AL.
	Examiner	**Art Unit**	
	Joseph P. Hirl	2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *March 2, 2006*.

2. ☒ The allowed claim(s) is/are *1-8,11-23 and 27-82*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None of the:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____

Examiner's Amendment/Reasons for Allowance

1.   An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

In the Claims

2.   Change the claims to read as follows:

1.   (CURRENTLY AMENDED) A system for electronic communication

management comprising:

a contact center configured to send and receive communications using dissimilar
communications channels;

a modeling engine configured to analyze a communication received by the contact center
on a communications channel and determine an intent of the received communication, wherein
the modeling engine is configured to automatically retrieve a model based on the intent of the
received communication;

an automatic response module supported by the modeling engine that generates a
predicted response to the received communication using the retrieved model;

an agent that composes an actual response to the received communication ~~using the~~
~~retrieved model~~ based on the intent of the received communication;

an adaptive knowledge base configured to store the models used by the modeling engine;
and

a feedback module configured to compare the actual response to the received
communication with the predicted response to the received communication and provide feedback
to the modeling engine, which uses the feedback to continuously update the models in the
adaptive knowledge base, so as to improve subsequent predicted responses to received
communications.

2.   (ORIGINAL) The system of claim 1, wherein the contact center is configured to
send and receive communications via text-based communication channels.

3.   (PREVIOUSLY PRESENTED) The system of claim 1, wherein the contact center is configured to send and receive communications via voice-based communication channels.

4.   (PREVIOUSLY PRESENTED) The system of claim 1, wherein the contact center is configured to receive text communications comprising natural language.

5.   (PREVIOUSLY PRESENTED) The system of claim 4, wherein the modeling engine comprises a natural language processor configured to analyze the text communications to identify concepts.

6.   (ORIGINAL) The system of claim 5, wherein the natural language processor performs a morphological analysis of the text communications.

7.   (ORIGINAL) The system of claim 5, wherein the natural language processor performs a semantic analysis of the text communications.

8.   (PREVIOUSLY PRESENTED) The system of claim 5, wherein the natural language processor comprises a lexical knowledge base.

9.   (CANCELED)

10.   (CANCELED)

11.   (PREVIOUSLY PRESENTED) The system of claim 1, wherein the contact center is configured to convert received communications into a universal data model format.

12.   (PREVIOUSLY PRESENTED) The system of claim 1, further comprising an audit module configured to monitor responses generated by agents for quality.

13.   (PREVIOUSLY PRESENTED) The system of claim 12, wherein the audit module is configured to generate an audit result that is fed back to the modeling engine.

14.   (PREVIOUSLY PRESENTED) The system of claim 1, wherein each of the models in the adaptive knowledge base comprises an accuracy gauge configured to be updated by feedback.

15.   (PREVIOUSLY PRESENTED) The system of claim 14, wherein the adaptive knowledge base comprises models for active concepts and models for inactive concepts.

16.   (ORIGINAL) The system of claim 15, wherein the models for active concepts become inactive when they have a sufficiently low accuracy rating.

17.   (ORIGINAL) The system of claim 15, wherein the models for inactive concepts become active when they have a sufficiently high accuracy rating.

18.   (ORIGINAL) The system of claim 1, wherein the models in the adaptive knowledge base are organized into categories and the categories are associated with branches.

19. (PREVIOUSLY PRESENTED) The system of claim 18, wherein the modeling engine is configured to modify the branches in the adaptive knowledge base using the feedback from the feedback module.

20. (PREVIOUSLY PRESENTED) The system of claim 18, wherein hierarchies of the branches in the adaptive knowledge base comprise manually created hierarchies.

21. (PREVIOUSLY PRESENTED) The system of claim 18, wherein hierarchies of the branches in the adaptive knowledge base comprise automatically created hierarchies.

22. (ORIGINAL) The system of claim 18, wherein the branches in the adaptive knowledge base have associated rules.

23. (PREVIOUSLY PRESENTED) The system of claim 1, wherein the modeling engine comprises a statistical modeler configured to create the models and perform relationship algebra using the models.

24. (CANCELED)

25. (CANCELED)

26. (CANCELED)

27. (PREVIOUSLY PRESENTED) The system of claim 1, wherein the modeling engine is configured to support an application specific module.

28. (ORIGINAL) The system of claim 27, wherein the application specific module is an automatic response module.

29. (ORIGINAL) The system of claim 27, wherein the application specific module is an expertise routing module:

30. (ORIGINAL) The system of claim 27, wherein the application specific module is an automatic task prioritization module.

31. (PREVIOUSLY PRESENTED) The system of claim 27, wherein the application specific module is a content filter module configured to filter content of agent-generated responses.

32. (ORIGINAL) The system of claim 27, wherein the application specific module is a business process automation module.

33. (ORIGINAL) The system of claim 27, wherein the application specific module is a workflow application.

34. (ORIGINAL) The system of claim 27, wherein the application specific module is a Frequently Asked Questions module.

35.   (PREVIOUSLY PRESENTED) The system of claim 27, wherein the application specific module is configured to generally classify the received communications according to content.

36.   (ORIGINAL) The system of claim 2, further comprising a digital signal processing module configured to process received voice communications.

37.   (PREVIOUSLY PRESENTED) The system of claim 36, wherein the digital signal processing module is further configured to categorize the received voice communications according to acoustical content of the received voice communications.

38.   (ORIGINAL) The system of claim 1, wherein the feedback module is further configured to support multiple feedbacks to a single received communication.

39.   (PREVIOUSLY PRESENTED) The system of claim 1, wherein the received communications comprise documents.

40.   (ORIGINAL) The system of claim 39, wherein a statistical matching value between the documents and the models is evaluated by a calculated statistical likelihood value.

41.   (CURRENTLY AMENDED) A method for managing electronic communications in a computer network, the method comprising:

receiving a communication from one of a plurality of dissimilar communications channels over the computer network;

analyzing the communication at a computer coupled to the computer network to determine an intent of the communication, and automatically retrieving a model based on the intent of the communication;

generating a predicted response to the communication based on the intent of the communication using the retrieved model;

generating an actual response to the communication based on the intent of the communication; and

comparing the actual response to the predicted response to provide feedback, which is used to update the model, so as to improve subsequent predicted responses to communications received over the computer network.

42.   (PREVIOUSLY PRESENTED) The method of claim 41, further comprising routing the communication based on semantical content of the communication.

43.   (PREVIOUSLY PRESENTED) The method of claim 41, wherein the communication comprises a communication expressed in natural language.

44.   (PREVIOUSLY PRESENTED) The method of claim 41, wherein generating a predicted response to the communication comprises comparing the communication to a model.

45.   (PREVIOUSLY PRESENTED) The method of claim 41, wherein generating an actual response is performed by an automatic response module.

46.   (PREVIOUSLY PRESENTED) The method of claim 41, wherein generating an actual response is performed by an agent.

47.   (PREVIOUSLY PRESENTED) The method of claim 41, wherein the communication comprises a text communication comprising natural language.

48.   (PREVIOUSLY PRESENTED) The method of claim 47, wherein analyzing the communication comprises morphological analysis or semantic analysis.

49.   (PREVIOUSLY PRESENTED) The method of claim 41, wherein generating a predicted response to the communication comprises comparing the communication to a set of models that correspond to a category related to the intent of the communication.

50.   (PREVIOUSLY PRESENTED) The method of claim 41, wherein comparing the actual response and the predicted response generates feedback that is used to modify a model.

51.   (CURRENTLY AMENDED) The method of claim 50, wherein if the actual response is similar to the predicted response, the generated feedback is positive, and if the actual response is different from the predicted response, the generated feedback is negative.

52.   (PREVIOUSLY PRESENTED) The method of claim 41, wherein the communication comprises a voice communication expressed in natural language.

53.   (PREVIOUSLY PRESENTED) The method of claim 52, wherein analyzing the communication comprises digital signal processing of the voice communication.

54.   (PREVIOUSLY PRESENTED) The method of claim 53, wherein generating the predicted response to the communication comprises categorizing the voice communication based on acoustical content of the voice communication.

55.   (PREVIOUSLY PRESENTED) A method for processing a relationship event in a computer network, the method comprising:

receiving the relationship event over the computer network;

analyzing the relationship event at a computing device coupled to the computer network to identify concepts in the relationship event;

building an event model of the relationship event using the identified concepts;

mapping the event model to models in a knowledge base to generate category scores;

and

routing the relationship event over the computer network for action based on the category scores.

56.   (CURRENTLY AMENDED) A computer-readable medium having a program embodied thereon, the program being executable by a computer to perform a method for electronic communication management, the method comprising:

receiving a communication from one of a plurality of dissimilar communications channels;

analyzing the communication to determine an intent of the communication, and automatically retrieving a model based on the intent of the communication;

generating a predicted response to the communication based on the intent of the communication using the retrieved model;

generating an actual response to the communication based on the intent of the communication; and

comparing the actual response and the predicted response to provide feedback, which is used to update the model, so as to improve subsequent predicted responses to communications.

57.   (PREVIOUSLY PRESENTED) The computer-readable medium of claim 56, wherein comparing the actual response and the predicted response occurs in real time.

58.   (PREVIOUSLY PRESENTED) The computer-readable medium of claim 56, wherein comparing the actual response and the predicted response occurs off-line.

59.   (PREVIOUSLY PRESENTED) A computer-readable medium having a program embodied thereon, the program being executable by a computer to perform a method for processing a relationship event, the method comprising:

receiving the relationship event;

analyzing the relationship event to identify concepts in the relationship event;

building an event model of the relationship event using the concepts;

mapping the event model to models in a knowledge base to generate category scores; and

routing the relationship event over the computer network for action based on the category scores.

60.   (CURRENTLY AMENDED) A system for electronic communication management, comprising:

means for receiving a communication <u>from one of a plurality of dissimilar communications channels</u>;

means for analyzing the communication to determine intent<u>, and automatically retrieving a model based on the intent of the communication</u>;

means for predicting a response to the communication ~~based on the intent~~ <u>using the retrieved model, and for</u> generating a predicted response;

means for preparing a response to the communication <u>based on the intent of the communication, and for</u> generating an actual response; and

means for comparing the actual response and the predicted response to <u>provide feedback, which is used to update the model, so as to</u> improve subsequent predictions.

61.   (CURRENTLY AMENDED) A system for electronic communication management, comprising:

a contact center configured to send and receive communications via ~~at least one~~ <u>dissimilar</u> communication channel<u>s</u>;

a modeling engine configured to analyze a received communication to determine an intent, and further configured to retrieve ~~data related to~~ <u>a model based on</u> the intent;

an adaptive knowledge base configured to store models; and

a feedback module configured to compare a response predicted by the modeling engine in conjunction with the models in the adaptive knowledge base and an actual response to the received communication to generate feedback, the feedback being used to <u>continuously</u> update the models in the adaptive knowledge base such that the system learns from each received communication<u>, in order to improve subsequent predicted responses to received communications</u>.

62.   (ORIGINAL) The system of claim 61, wherein the modeling engine gains knowledge from communications on one communication channel and applies the knowledge to communications on another communication channel.

63.   (CURRENTLY AMENDED) A method for computerized analysis of communications using computer-generated adaptive models, comprising:

receiving a communication <u>via one of a plurality of dissimilar communications channels</u>;

analyzing content of the communication on a computer to identify at least one concept of the communication;

creating a model of the communication using the at least one concept;

comparing the model of the communication to a set of adaptive models to generate a predicted response to the communication using the model

generating an actual response to the communication based on the concept of the communication ;

comparing the predicted response and the actual response to generate feedback; and

using the feedback to ~~modify~~ update at least one of the set of adaptive models such that the set of adaptive models learns with each received communication, in order to improve subsequent predicted responses to received communications.

64.   (PREVIOUSLY PRESENTED) The method of claim 63, wherein comparing the predicted response and the actual response occurs in real time.

65.   (PREVIOUSLY PRESENTED) The method of claim 63, wherein using the feedback to modify at least one of the set of adaptive models occurs in real time.

66.   (PREVIOUSLY PRESENTED) The method of claim 63, wherein comparing the predicted response and the actual response occurs while further communications are being received.

67.   (PREVIOUSLY PRESENTED) The method of claim 63, wherein using the feedback to modify at least one of the set of adaptive models occurs while further communications are being received.

68.   (PREVIOUSLY PRESENTED) The method of claim 63, wherein the content of the communication comprises content expressed in a natural language.

69.   (PREVIOUSLY PRESENTED) The method of claim 63, wherein the content of the communication comprises metadata.

70.   (PREVIOUSLY PRESENTED) The method of claim 63, wherein the content of the communication comprises structured information.

71.   (PREVIOUSLY PRESENTED) The method of claim 63, wherein the communication comprises a text communication.

72.   (PREVIOUSLY PRESENTED) The method of claim 63, wherein the communication comprises a voice communication.

73.   (CURRENTLY AMENDED) A system for electronic communication management, comprising:

a contact center configured to send and receive communications via dissimilar communications channels;

an adaptive knowledge base configured to store models;

a modeling engine configured to analyze a received communication to determine an intent, to prepare a model of the communication based on the intent, and to compare the model of the communication with the models stored in the adaptive knowledge base to generate a predicted response; and

a feedback module configured to compare the predicted response with an actual response to the received communication to generate feedback used by the adaptive knowledge base to ~~modify~~ update at least one model such that the system learns from the received communication, in order to improve subsequent predicted responses to received communications.

74.   (PREVIOUSLY PRESENTED) The system of claim 73, wherein a human agent generates the actual response to the received communication.

75.   (PREVIOUSLY PRESENTED) The system of claim 73, wherein the adaptive knowledge base modifies at least one model in response to each communication received by the contact center such that the system learns from each received communication.

76.   (PREVIOUSLY PRESENTED) The system of claim 73, wherein the modeling engine is further configured to determine a plurality of intents in the received communication.

77.   (PREVIOUSLY PRESENTED) The system of claim 76, wherein the modeling engine is further configured to determine an explicit intent and an implicit intent in the received communication.

78.   (CURRENTLY AMENDED) A method for real-time learning in a computerized communication management system, comprising:

receiving a communication using one of a plurality of dissimilar communications channels;

creating a model of the communication on a computer;

comparing the model of the communication to a set of adaptive models to generate a predicted action in response to the communication;

comparing the predicted action with an actual action in response to the communication to generate feedback; and

continuously updating the set of adaptive models according to the feedback, so as to improve subsequent predicted responses to received communications.

79.   (PREVIOUSLY PRESENTED) The method of claim 78, wherein if the predicted action is similar to the actual action, the feedback is positive and an accuracy rating of a model in the set of adaptive models that generated the predicted action is increased.

80.   (PREVIOUSLY PRESENTED) The method of claim 78, wherein if the predicted action differs from the actual action, the feedback is negative and an accuracy rating of a model in the set of adaptive models that generated the predicted action is decreased.

81.   (PREVIOUSLY PRESENTED) The method of claim 78, wherein if the predicted action differs from the actual action and if a model that is similar to the actual action exists in the set of adaptive models, then the feedback is negative for a model in the set of adaptive models that generated the predicted action and the feedback is positive for the model that is similar to the actual action.

82.   (CURRENTLY AMENDED) A method for real-time modeling of communications in a computerized communication management system, comprising:

receiving a communication from one of a plurality of dissimilar communications channels;

creating a model of the communication on a computer;

comparing the model of the communication to a set of adaptive models to determine a category for the communication;

comparing the determined category with an actual category for the communication to generate feedback; and

continuously updating the set of adaptive models according to the feedback, so as to improve subsequent predicted responses to received communications.

Authorization for this examiner's amendment was given fax dated April 11, 2006

from George Gates.

Reasons for Allowance

3.   Claims 1-8, 11-23 and 27-82 are allowed.

4.   The following is an examiner's statement of reasons for allowance:

The cited prior art taken alone or in combination fails to teach the claims

invention of electronic communication (relationship event) using dissimilar

communication channels wherein communications received are model analyzed to

determine intent (reason) and a modeled predicted response is determined by the intent

which is compared to an actual response determined by the intent, such responses are

compared and feedback developed in relation to such comparison is continuously

adapting the modeled predicted response to improve subsequent modeled predicted

responses. In the alternative, models are relationship event built, category scored, and

the relationship event is routed based on category score.

The closest prior art taken in combination (USPN 6,138,139, Beck et al; USPN

5,018,215; USPN 6,064,971, Hartnett; USPN 5,745,652, Bigus; USPN 6,161,130,

Horvitz; USPN 5,101,349, Tokuume et al; USPN 5,371,807, Register et al; USPN

5,754,671, Higgins; USPN 6,006,221, Liddy et al; USPN 5,963,447, Kohn; USPN

6,256,773, Bowman-Amuah; USPN 6,615,172, Bennett et al; USPN 6,490,572,

Akkiraju; USPN 5,251,131, Masand; USPN 5,099,425, Keanno; USPN 6,430,615;

Hellerstein; Adaptive model-based neural network control, Johnson et al; and Logical

structure recognition of scientific bibliographic references, Parmentier) while addressing

in a mosaic manner elements of the invention, such combination fails to teach the

invention without unduly motivating one of ordinary skill in the art to exert substantial

experimental effort to integrate such combination concepts. Further to the Examiner's

Amendment cited above, the Applicant's Remarks in response dated March 2, 2006 are

acknowledged and accepted.

5.   Any comments considered necessary by applicant must be submitted no later

than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on

Statement of Reasons for Allowance."

Correspondence Information

6.   Any inquiry concerning this information or related to the subject disclosure

should be directed to the Primary Examiner, Joseph P. Hirl, whose telephone number is

(571) 272-3685. The Examiner can be reached on Monday – Thursday from

6:00 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the

Examiner's supervisor, David R. Vincent can be reached at (571) 272-3080.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

Hand delivered to:

Receptionist,

Customer Service Window,
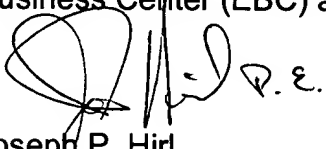
Randolph Building,

401 Dulany Street,

Alexandria, Virginia 22313,

(located on the first floor of the south side of the Randolph Building);

or faxed to:

(571) 273-8300 (for formal communications intended for entry.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have any questions on access to Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll free).

Joseph P. Hirl
Primary Examiner
May 3, 2006